

DESCRIPTIONS OF THREE NEW SPECIES OF
AUSTROGOMPHUS [NEUROPTERA : *Odonata*].

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(Plate xxxiv.)

The Australian species of the subfamily Gomphinae are comprised in the three genera *Austrogomphus*, *Ictinus* and *Petalura*. The two latter contain one species apiece; of the former, twelve species have already been described. Three new species are now added, all of which come from Northern Queensland.

1. *AUSTROGOMPHUS ARBUSTORUM*, n.sp. (= *proselytus* Selys, MSS.)

(Plate xxxiv., fig.1).

♂. Total length, 38 mm.; abdomen, 28 mm.: wings, fore 23 mm., hind 21·5 mm.

Wings.—*Neuration* black; *membranule* nil; *pterostigma* nearly 3 mm., fairly broad, black. *Nodal Indicator*

10-12	7-9
7-9	7-9

Head.—*Occipital ridge* 1 mm., black with a large triangular yellow spot. *Vertex* black with a round excavate yellow spot. *Ocelli* in a triangle, front transparent, other two black. *Antennae* short, black, basal joint short, thickened, a small yellow spot on inner side of base. *Eyes* brown. *Front* low and narrow, yellow with a black band, widest in the middle, across the clypeal suture, and extending on to the postclypeus. *Clypeus* yellow. *Labrum* yellow, upper suture black; often with a thin vertical transverse central line reaching half-way across from above. *Labium* and *mandibles* yellow; *mouth* edged with dark brown.

Thorax.—*Prothorax* black with a transverse yellow line and a central yellow spot. *Meso-* and *metathorax* black, marked with yellow as follows:—A pair of dorsal spots next prothorax; behind these an interrupted yellow collar formed by two transverse

elongated spots separated by the front of the dorsal ridge; behind these the dorsal ridge is elevated and marked for about 1.5 mm. with a fine yellow line; fork of ridge also yellow. On either side of ridge an elongate-oval humeral yellow spot; below this an irregular subhumeral yellow band enlarged into a small round spot in front of wing-joins;* then another broader lateral band separated from the last by an irregular band of black ground-colour; next a narrow and very irregular black band along the lateral suture, followed by a broad yellow band and another irregular black band. Rest of sides and underside yellow. Wing-joins black spotted with yellow; scuta and scutellæ yellow. *Legs*: coxæ yellow; one half of profemora and one-third of meso- and metafemora yellow underneath; elbows with a bright yellow spot; rest black.

Abdomen.—1-2 swollen, 3-6 very narrow, 7-10 clubbed. Colour: 1 yellow with a transverse basal black band; 2 black above, a yellow stripe along the dorsum, not quite the length of the segment; sides yellow, carrying a pair of small yellow spurs; 3-6 black with a transverse basal yellow band; a thin yellow line along the dorsum, not as long as the segment, and decreasing in length from 3-6; low down on each side a central yellowish spot; 7 black with the transverse basal yellow band, and a yellow spot low down on each side about one-third from the base and joining the basal band below; 8 black, a large basal yellow spot on either side, suture touched with yellow; 9 same as 8, but shorter, spots smaller, and with a transverse anal yellow line; 10 yellow above with a basal black line and two slanting black dorsal lines, sides and underside black. Ventral carina blackish.

Appendages.—*Superior* rather short, 1 mm., slightly separate at bases, subcornute, divergent. Colour yellow, tips touched with dark brown. At the bases, underneath, is a pair of sharp curved claws reaching downwards between the two parts of the inferior appendage. *Inferior* short, bifid, the two

* This term is used as the equivalent of "naissances des ailes" of M. René Martin.

parts widely separate; tips rather thick and blunt, upcurved; yellowish-brown.

♀. Very similar to ♂, differing as follows:—*Abdomen* broader, more cylindrical, less clubbed; 2 with a large diamond-shaped dorsal yellow spot; no spurs; 10 dull olive-green, short, projecting below between appendages. *Appendages* short, about 1 mm., subconical, wide apart, parallel, bluntly pointed, yellowish; the projection of seg. 10 appearing as an olive-coloured tubercle between them, and nearly as long.

H a b.—Kuranda, N.Q.; December-January; local.

This species appears to be confined to a small area on the ranges about Kuranda. It does not occur higher up at Atherton, and below the range I took only isolated specimens.

It is abundant along the sandy banks of the River Barron, where I took it resting high up on the bushes and small trees along the river bank. It never appears to settle on the ground, but a dozen or more might often be seen resting on one small tree. When disturbed it generally flies off with the wind to another tree. It is also fond of flying in and out about the trees on warm still days.

Note.—M. René Martin informs me that there is in the collection of Baron de Selys-Longchamps a specimen, undescribed, but named *A. proselytus*, which he considers identical with this species; locality uncertain, but supposed to be Queensland.

2. AUSTROGOMPHUS ARENARIUS, n.sp.

(Plate xxxiv., fig.2).

♂. Total length, 49-51 mm.; abdomen, 35-37 mm.: wings, fore 29 mm., hind 27 mm.

Wings.—*Costa* pale yellowish outwards to tip, rest of neuration black. Wings often slightly suffused with brownish all over.

Membranule nil. *Pterostigma* fairly broad, 3 mm. long, covering 5 cellules, black. *Nodal Indicator*

13	8-9	
10	7-10	

Head.—*Occipital ridge* 1 mm., black, marked with a large yellow spot above. *Vertex* black, a pair of small tubercles behind ocelli, and behind these a curved yellow plate. *Ocelli* black,

collinear. *Eyes* brown, edged with yellowish beneath. *Antennae* thick, short, black, with a yellow line on inner side of base. *Front* greenish-yellow. *Clypeus* greenish-yellow, separated from the front by a black band in the suture, broadest in the middle. *Labrum* greenish-yellow, bordered all round with black. *Labium* dull yellowish. *Mandibles* yellow; *mouth* thickly edged with black.

Thorax.—*Prothorax* black with a yellow collar in front; behind, an irregular transverse yellow band, thickened at sides and curving outwards in the middle so as to embrace two small round dorsal yellow spots, very close together. *Meso- and meta-thorax* black above, marked with bright yellow as follows:—A thin line along the dorsal carina, which is elevated, forming an obtuse-angled vertical ridge; on either side a large mark in the form of a broad figure 7; below this mark on either side three yellow spots on a broad black band; the first spot close to the front wing-join and the tail of the 7, the second below the middle of the 7, the third close up to the angle of the 7 and often conjunct with it. Beyond this last spot and close to it is a small round yellow spot, just over the mesocoxa. The sides of the thorax may be described as bright yellow with two parallel bands of black; the first band irregular, the second fairly straight, and both meeting near the metacoxa and forming a broad irregular cross-band running up around the coxæ. Wing-joins black spotted with yellow; scuta and scutellæ bright yellow, separated by black ground-colour. Underside pale yellowish. *Legs* black, except profemora, yellow touched with black; other femora with a yellowish stripe; elbows spotted with yellow; coxæ with large yellowish spots at bases.

Abdomen.—1-2 swollen, 3-7 narrow, 8-10 clubbed. Colour: 1 yellow with a transverse black band interrupted by the dorsal carina; 2 black with a large dorsal bright yellow mark, the shape of which varies in different specimens, being sometimes a narrow isosceles triangle with its base at the base of the segment, and sometimes like a chess-pawn; two large yellow spots on each side, merging into one another; this segment also carries a pair

of rounded yellow spurs: 3-6 black, with a fairly broad transverse basal yellow ring, and an elongate oval dorsal yellow mark, pointed basally; this mark is small in 6, large in 5, and in 3-4 so large as to become merged into the basal ring; 7, basal three-fifths yellow, rest black; 8 black, with a pair of large basal yellow spots just touching dorsally: 9 yellow, with a large black dorsal spot, and on either side a large irregular smear of brownish-black; 10 black, with a transverse yellow line close to appendages. Underside black, 3-5 lined with yellowish.

Appendages very remarkable. *Superior* 1.3 mm., bluntly subcylindrical; bright yellow slightly tipped with black and carrying some tiny hairs; close together at bases, divergent, pointing somewhat upwards. Each appendage carries underneath on its basal half an enormous black recurved tubercle or tooth wider than the appendage itself; behind this at the base is a small round black tubercle. *Inferior* bifid, the two parts separated by the superior tubercles; half as long as superior, downy, curving upwards and ending in a blunt clubbed tip; black, with long brown hairs at base.

The form of the appendages is best understood by reference to the figure (Pl. xxxiv., fig. 2).

♀. Similar to ♂ in size and markings. *Abdomen* thicker, not so clubbed, no spurs on 2; 10 small, black. Appendages subcylindrical, scarcely 1 mm. long, separate at bases, parallel, pointed at tips, downy, bright yellow.

H a b.—Kuranda, N.Q.; January; rare.

This species is found along the sandy shores of the River Barron. It is much rarer than the preceding, isolated specimens only occurring. Unlike the preceding, this species seldom if ever rests in trees or bushes, but is generally found resting either on the hot sand or on a low twig or branch close to the ground. It is active and alert. When disturbed, it flies quickly off a foot or two above the ground and generally settles down again some twenty or thirty yards further on. It is difficult to capture.

This species probably has a restricted range along the coastal ranges behind Cairns. A few specimens were seen by me along the river below the ranges, but it is by no means a common species in any locality.

No specimen is known in any European collection which can be referred to this species. The remarkable appendages mark it out as very distinct from other species of *Austrogomphus*.

3. *AUSTROGOMPHUS PRASINUS*, n.sp.

(Plate xxxiv., fig.3).

♂. Total length 43mm.; abdomen 32 mm.; wings, fore 28 mm., hind 26mm.

Wings.—*Neuration* black, a faint touch of saffroning at bases. *Membranule* nil. *Pterostigma* 3 mm. long, covering 3-4 cellules, fairly broad, black. *Nodal Indicator* $\left\| \begin{array}{cc} 14-17 & 9-11 \\ 10-11 & 11 \end{array} \right\|$

Head.—*Occipital ridge* 1 mm., black above, greenish behind. *Vertex* black. *Ocelli* black, the median one set below the other two. *Antennæ* thin, black, basal joint short and thick. *Eyes* very dark brown. *Front* yellowish-green, bordered above and below with black. *Clypeus*: postclypeus black with a yellowish-green spot low down on either side near anteclypeus, the latter yellowish-green with a black band in the suture next labrum. *Labrum* yellowish-green with an inverted black T-mark. *Labium* and *mandibles* yellowish; *mouth* broadly edged with black.

Thorax.—*Prothorax* black, with two small round central yellowish-green spots close together, and a larger spot just behind; suture yellowish-green. *Meso- and metathorax* black, with a pair of deep green humeral marks somewhat enlarged in front, so as to resemble a figure 7 with the top part cut off short. Dorsal ridge elevated into a small spike near the middle, and touched for about 1 mm. with a fine yellow line. Following the 7-mark on either side is a narrow subhumeral green stripe, separated from the 7-mark by a broad band of black; next, a rather broad black band; then on the sides the colour is greenish-yellow, with a curved black mark close under the fore wing-joins, and a small dull brownish spot on the mesospiracle. Wing-joins black;

scuta and scutellæ yellow, surrounded by black. Underside greenish-yellow. *Legs* black; coxæ and undersides of profemora yellowish.

Abdomen.—1-2 swollen, 3-7 narrow, 8-10 broad and clubbed. Colour: 1 black above, with a large triangular yellowish mark; sides yellowish: 2 with a suboval dorsal yellowish mark, somewhat contracted in the middle; sides yellowish; genital appendages large, black; spurs rounded: 3-6 black, with a transverse basal yellowish band; 7, basal third yellowish, rest black, the yellow marking enlarged above and extending along the dorsal ridge to a sharp point at anal end of segment: 8 black; on each side, low down, a basal yellowish spot: 9-10 black.

Appendages.—*Superior* 1 mm., wide apart, parallel, subcylindrical, fairly thick, ending outwards in a small spike; bright yellow, bases black. Underneath is a curved blunt hooked tubercle. *Inferior* very short, one-third as long as superior, bifurcate, the two parts wide apart; blunt, curved upwards in a hook, so as to meet superior near bases; black, separated by a brownish tubercle on 10.

♀. A similar but slightly larger insect; total length 47 mm.; wings often tinged with pale brownish. Differs from ♂ as follows:—*Abdomen* much thicker, subcylindrical, *not* clubbed; no spurs on 2; 10 short, swollen below appendages into a rough blackish tubercle.

Appendages.—0.8 mm., conical, slightly separated and inclined towards one another, tips with a sharp spike on the outer margin, blunt inwards, touched with black. Colour yellow.

Hab.—Kuranda, N.Q.; January; local.

Unlike the two preceding species, this one is never found along the banks of the main river, but is confined to a few densely wooded mountain creeks in its vicinity. It is extremely local, but abundant when it occurs. It has a fast zig-zag flight, and is fond of sitting on leaves of trees or grass stems. It takes alarm very easily, but is not difficult to capture.

It is difficult to indicate any special affinities which these three species possess with other members of the genus. All the species are very closely related, and this has led M. René Martin to include them all under the one genus *Austrogomphus*, which now contains both the *Austrogomphus* and *Hemigomphus* of former writers. *A. prasinus* seems to be the least closely allied to the others, and it is the only one whose colours are not pure yellow and black; but I cannot see any characteristic which would warrant its forming the type of a new genus.

EXPLANATION OF PLATE XXXIV.

- Fig. 1.—*Austrogomphus arbustorum*, n.sp.; ♂ appendages.
 Fig. 2.— ,, *arenarius*, n.sp.; ♂ appendages.
 Fig. 3.— ,, *prasinus*, n.sp.; ♂ appendages.
 A. Dorsal view. B. Lateral view